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COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM
CHAIRMAN

COMMITTEE ON THE JUDICIARY

INTELLECTUAL PROPERTY SUBCOMMITTEE

REGULATORY REFORM SUBCOMMITTEE

February 25, 2014

Pollution Prevention Control
U.S. EPA
1200 Pennsylvania Ave NW
Mail Code 7409-M
Washington, D.C. 20460

Dear Sir or Madam:

My constituent, exempt 6 a exempt 6, has asked me for assistance with a matter relating to your agency.

exempt 6 would like to request a meeting with a staffer at your agency to discuss an invention he has been working on to prevent sewage backup in residential and commercial buildings and to mitigate stormwater runoff.

I have enclosed the paperwork exempt 6 sent to my office. Should you require any additional information, please feel free to contact Robert Rische in my Washington, D.C. office at 202-225-3906.

Thank you for your assistance with this matter.

Sincerely,

Darrell Issa
Member of Congress

DEI: RR

Current Design Flaws

Currently when a clog develops between the structure and the sewer main line the cleanout has to be located.

Current Design Flaws

If clog is downstream of cleanout,
when cleanout is opened by a plumber,
sewage is released due to pressure build up
in the pipes.

Current Design Flaws

Sometimes occupants will open the cleanout to continue using the plumbing while it is clogged. This increases the amount of sewage spilled on a daily basis!

Current Design Flaws

These sewage spills contaminate the environment by flowing into storm drains, exposes playing children to harmful bacteria and creates foul odor. The contaminants eventually end up in our rivers and even the ocean.

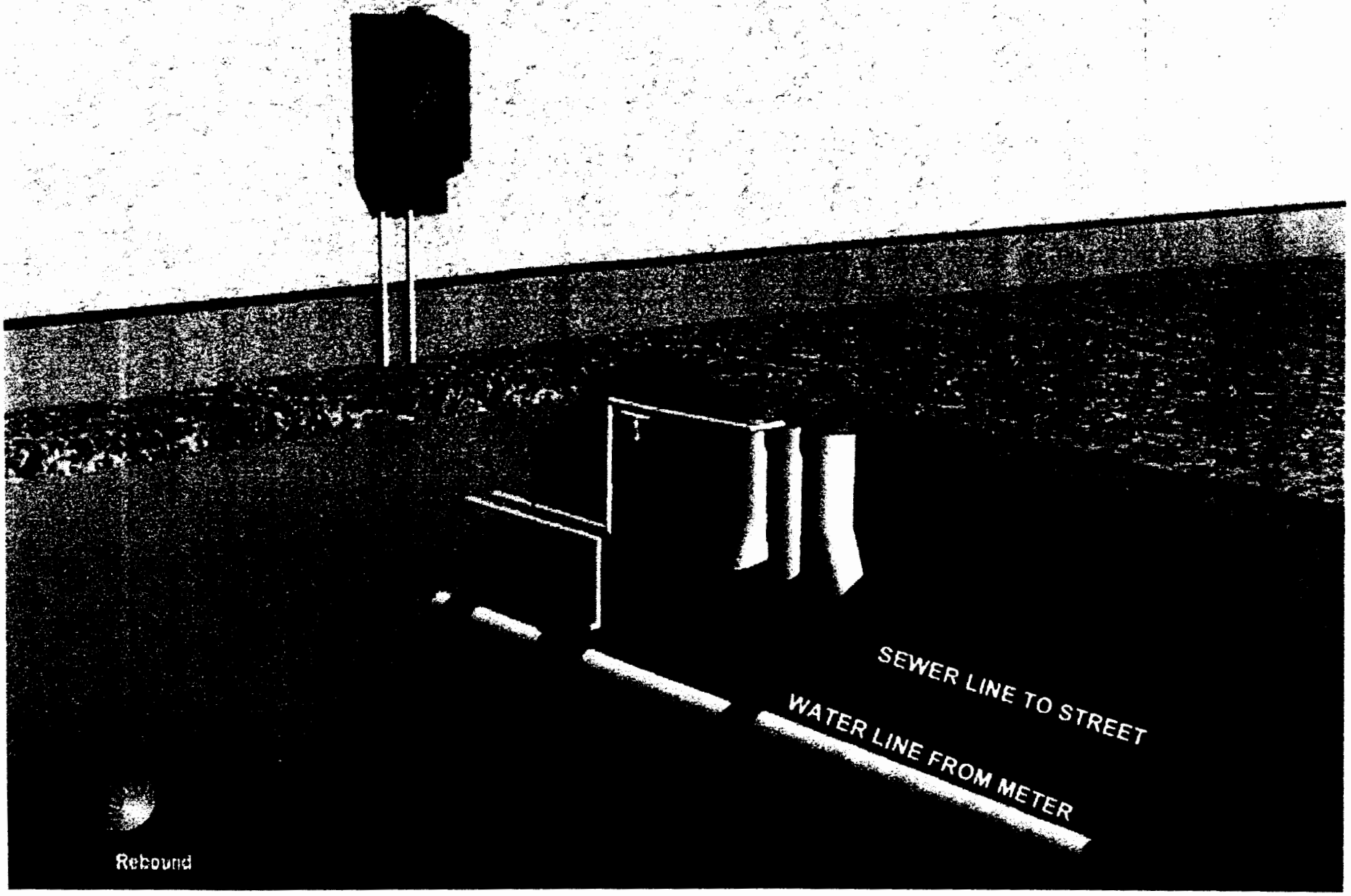
Solution:

Persuasive Environmental Recovery System II

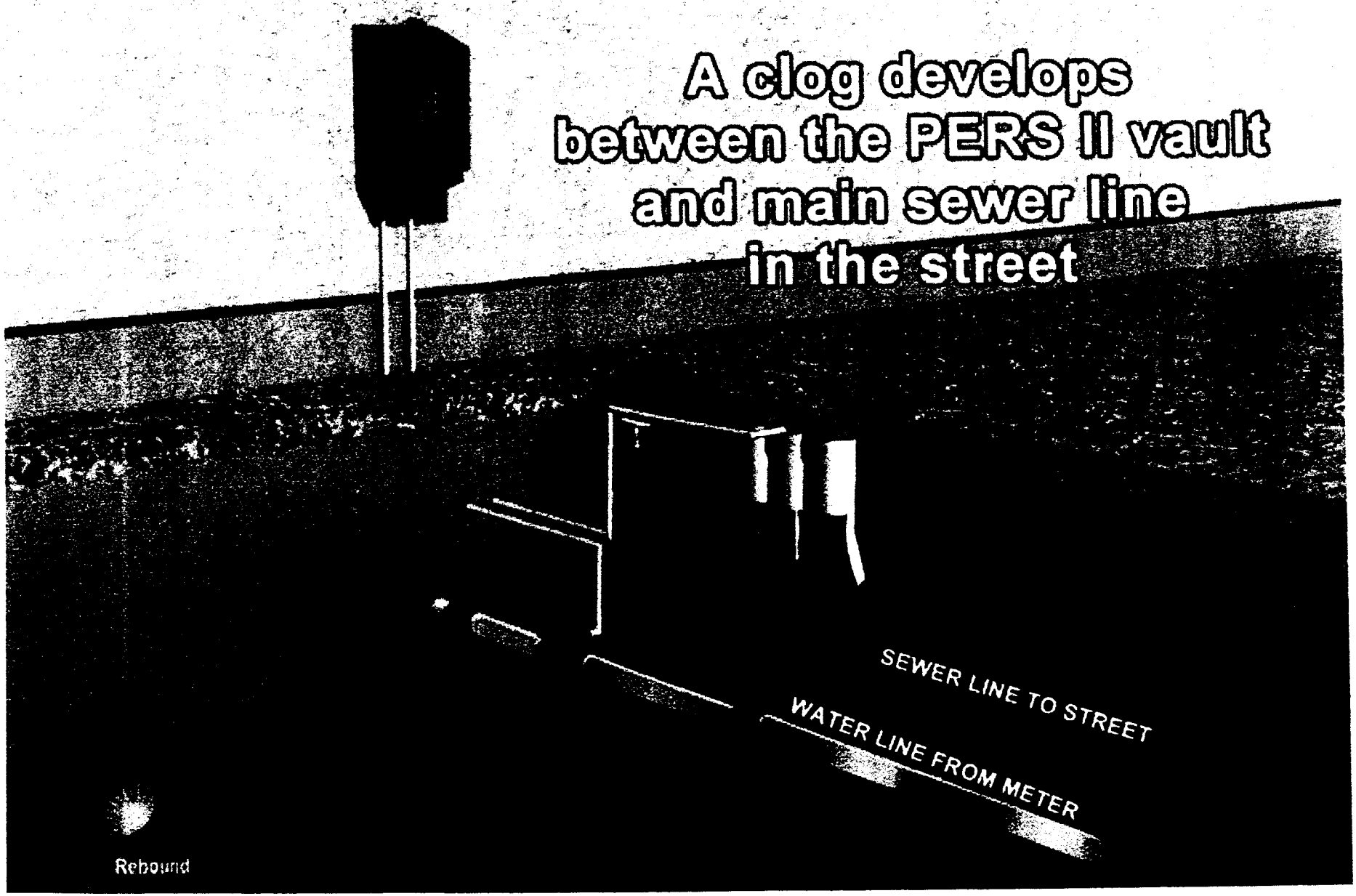
P.E.R.S. II Vault

The PERS II Vault is installed between the structure and the sewer main line and the water meter. Installation can be done on existing and new construction.

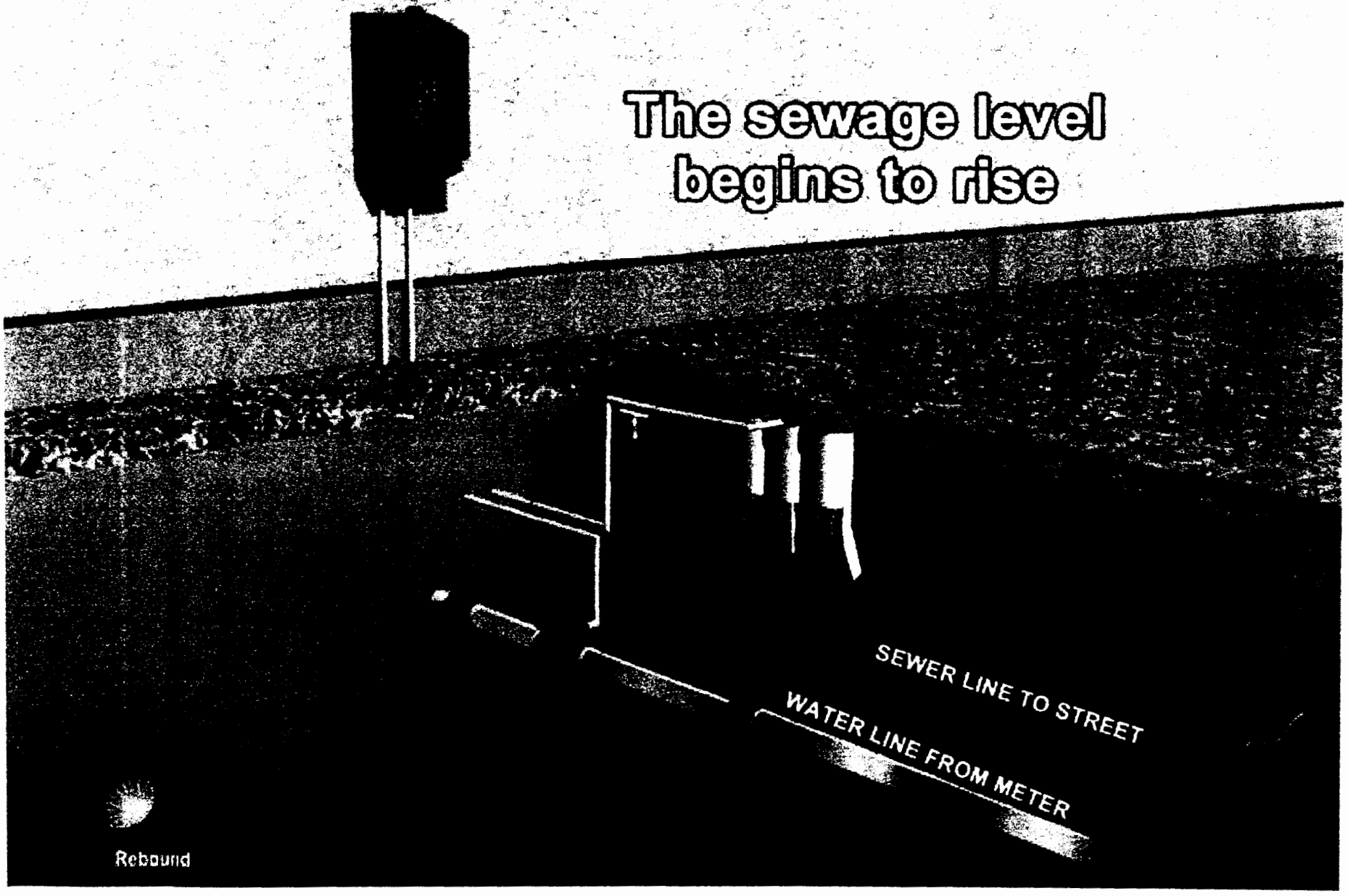
Persuasive Environmental Recovery System II



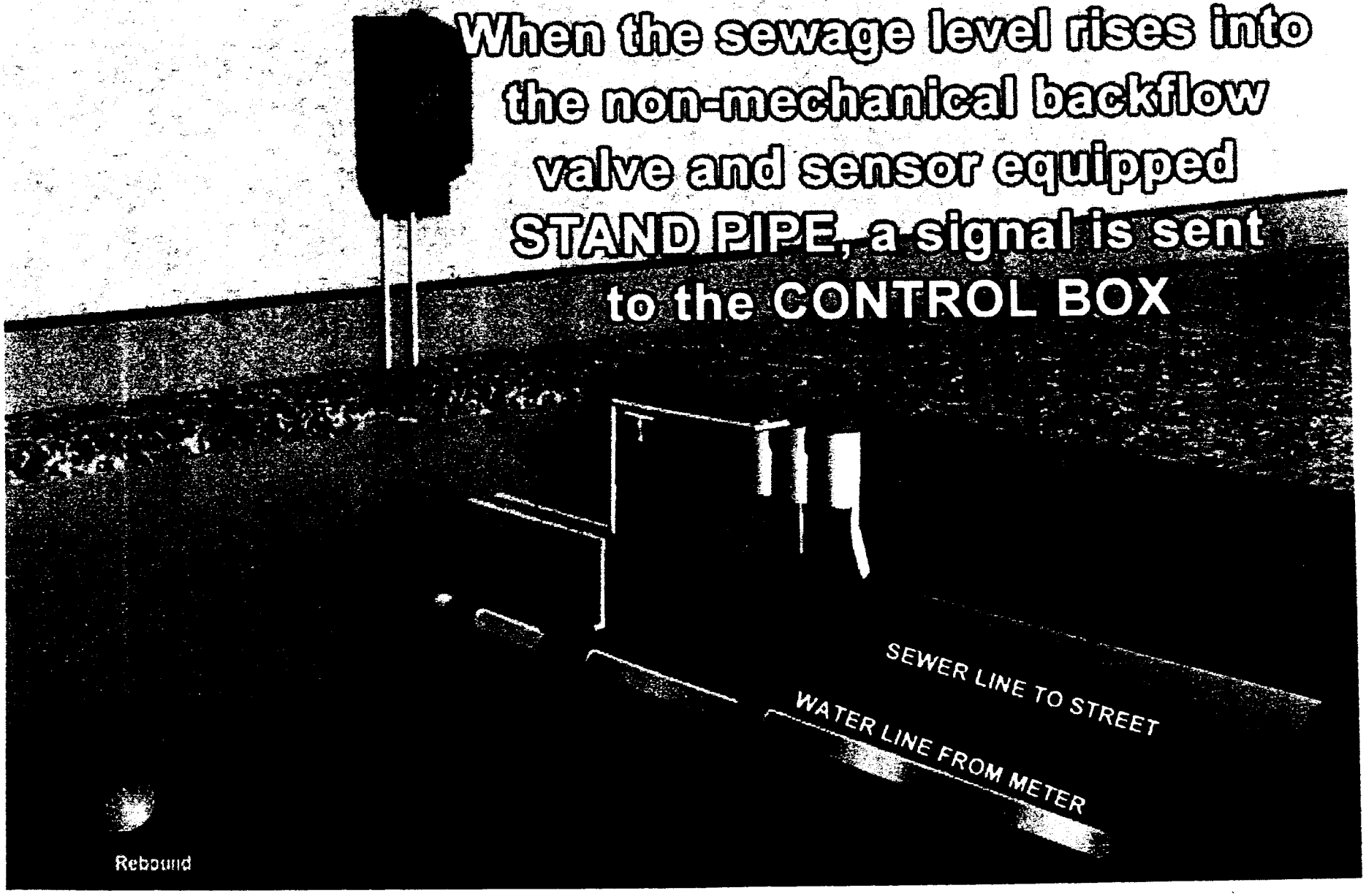
Persuasive Environmental Recovery System II



Persuasive Environmental Recovery System II



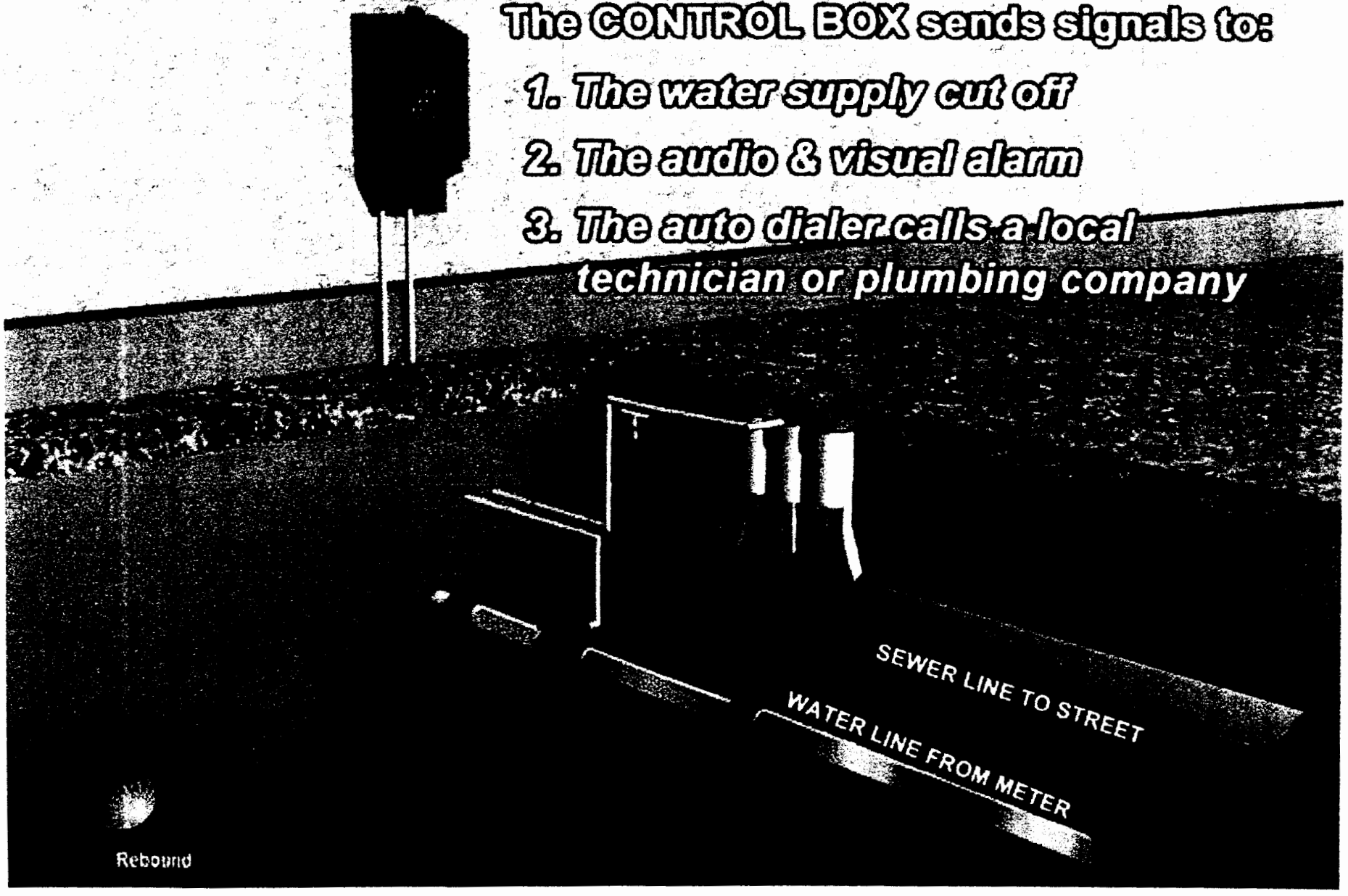
Persuasive Environmental Recovery System II



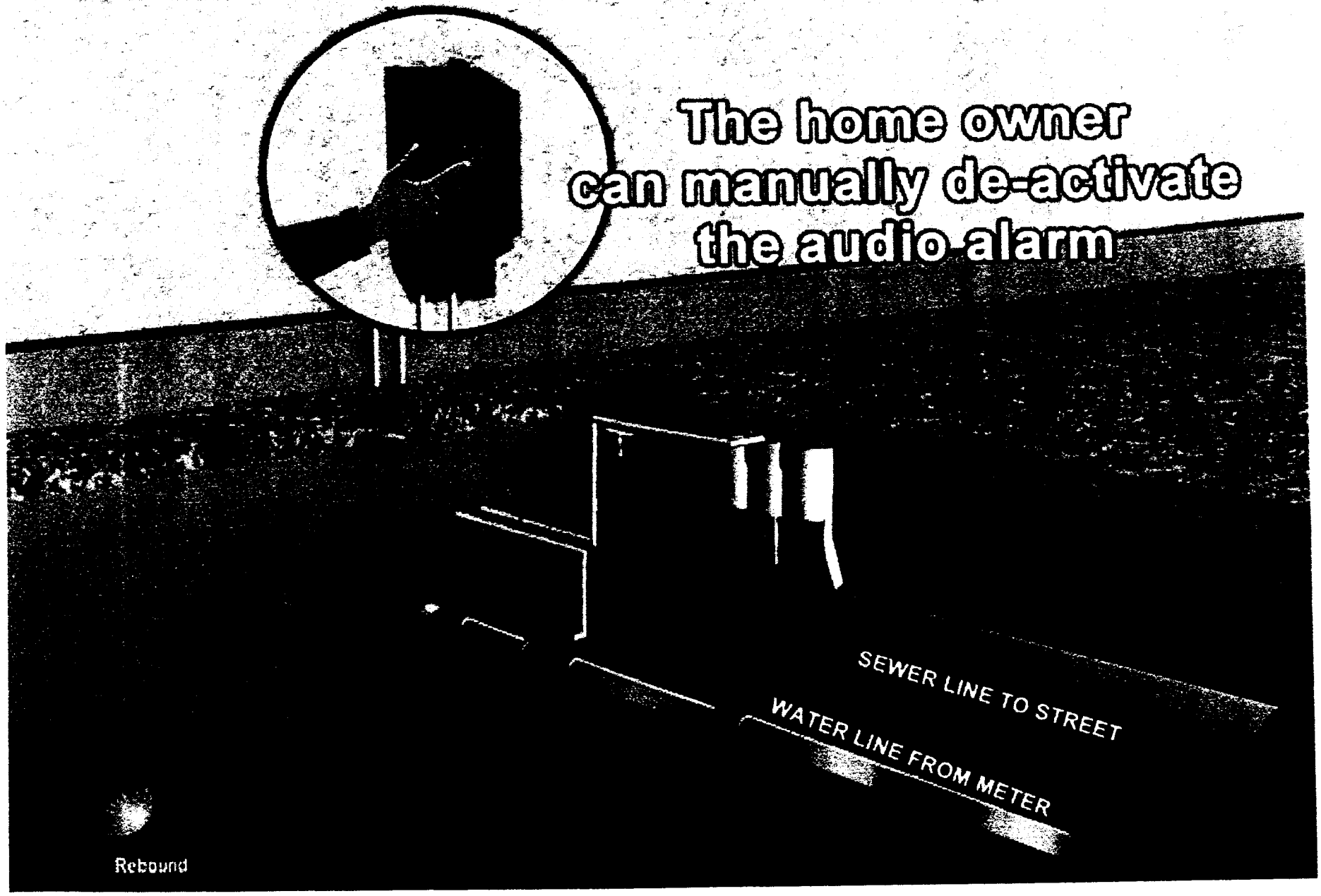
Persuasive Environmental Recovery System II

The CONTROL BOX sends signals to:

1. *The water supply cut off*
2. *The audio & visual alarm*
3. *The auto dialer calls a local technician or plumbing company*



Persuasive Environmental Recovery System II



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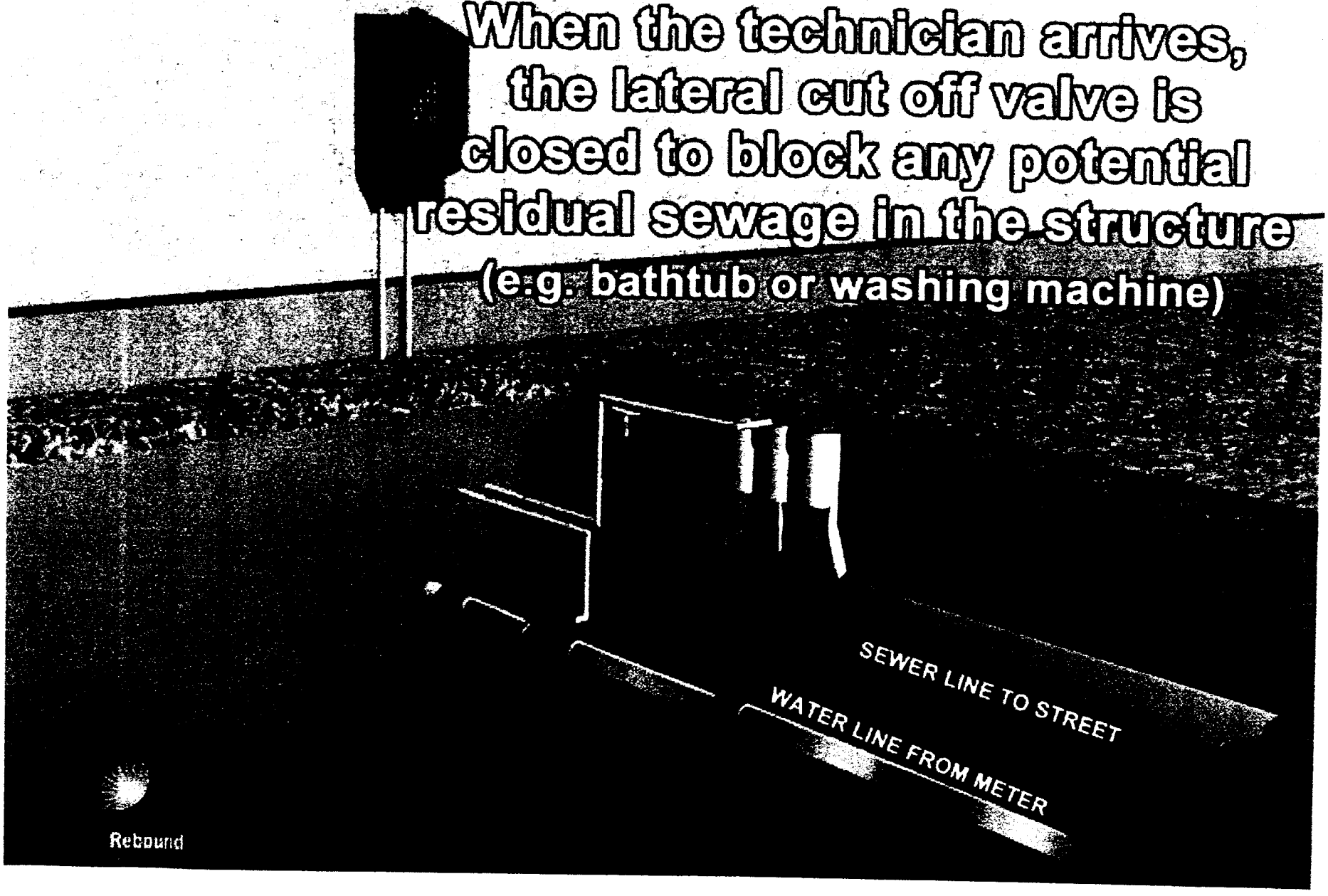
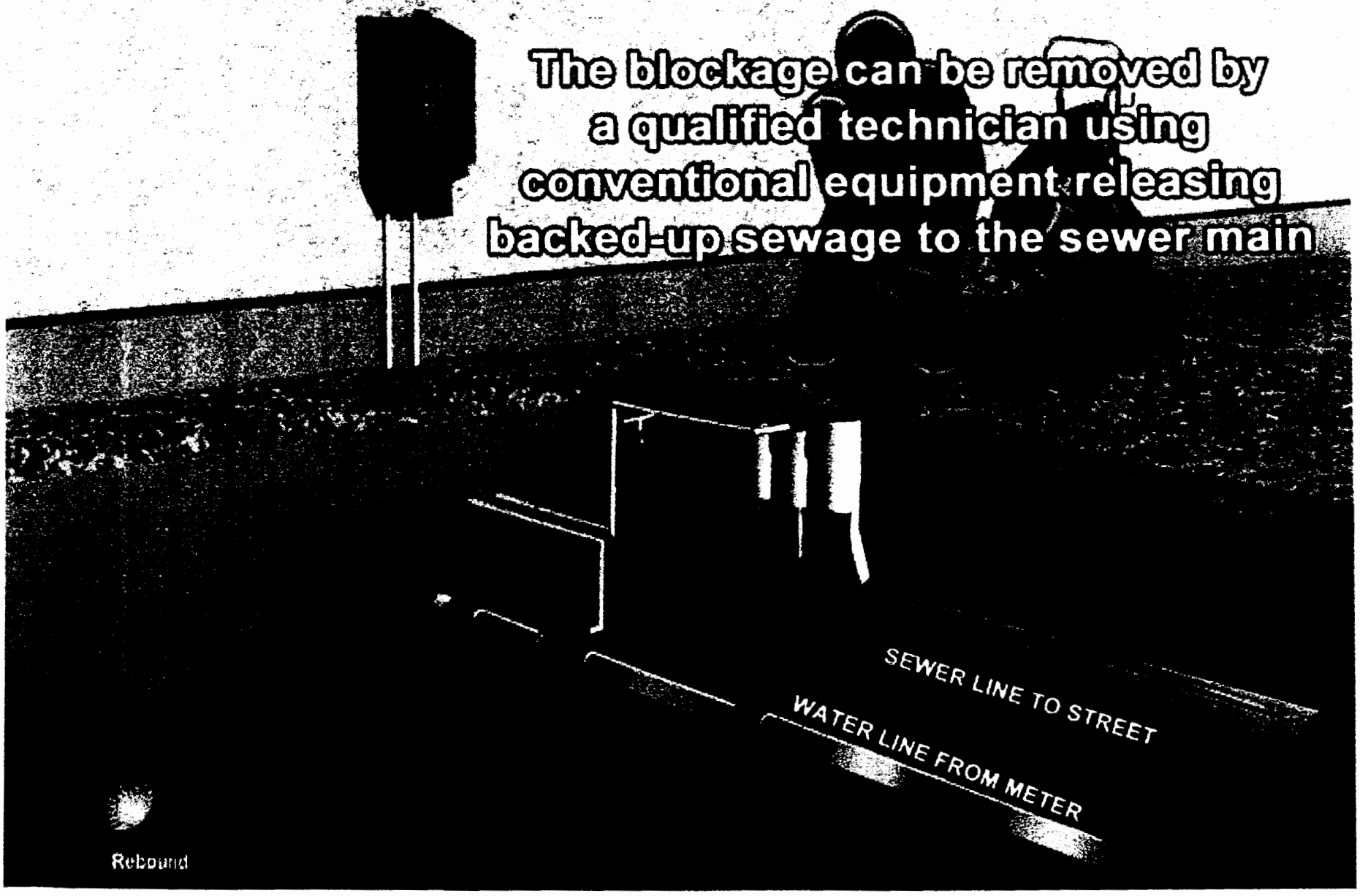
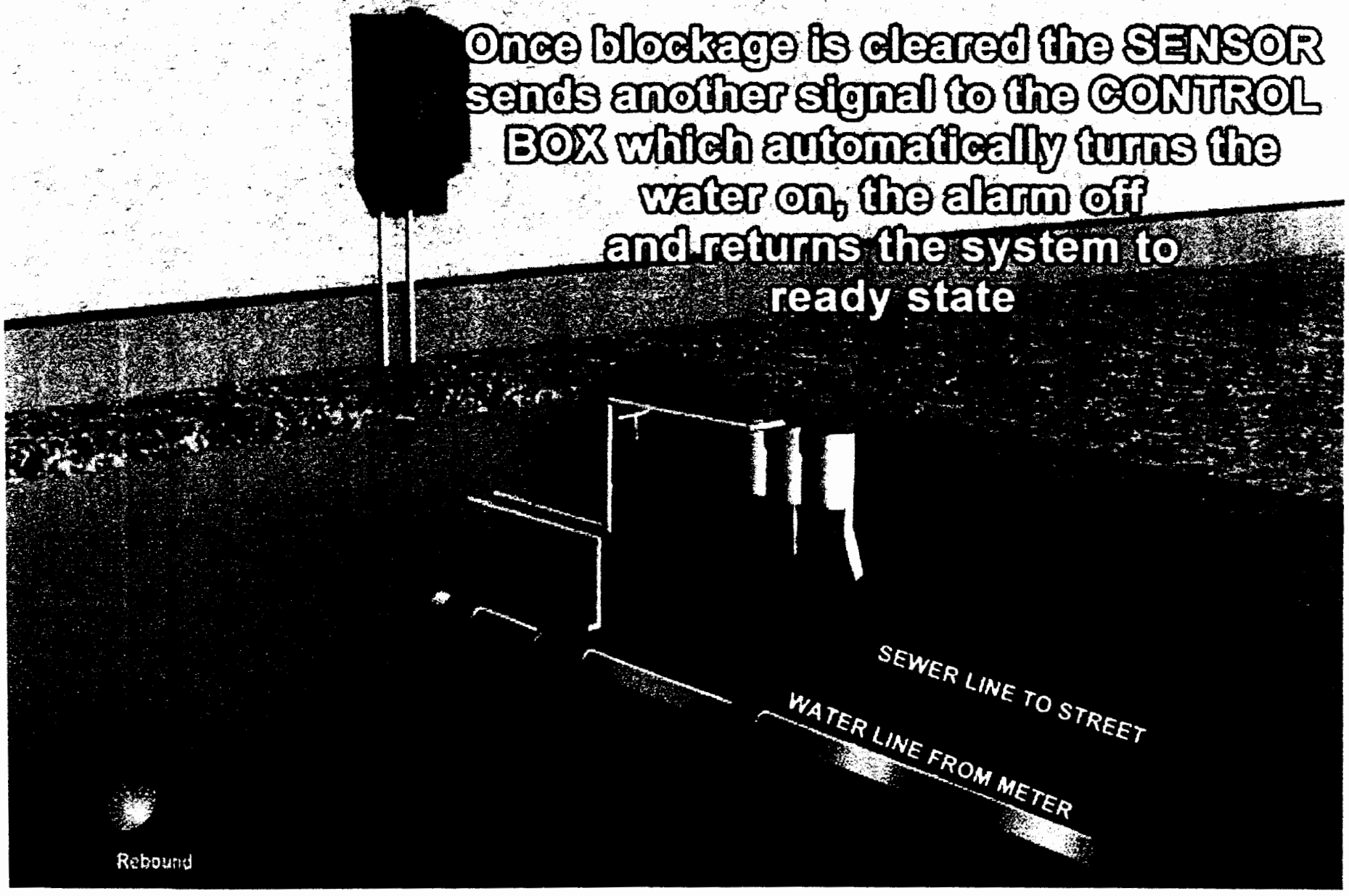


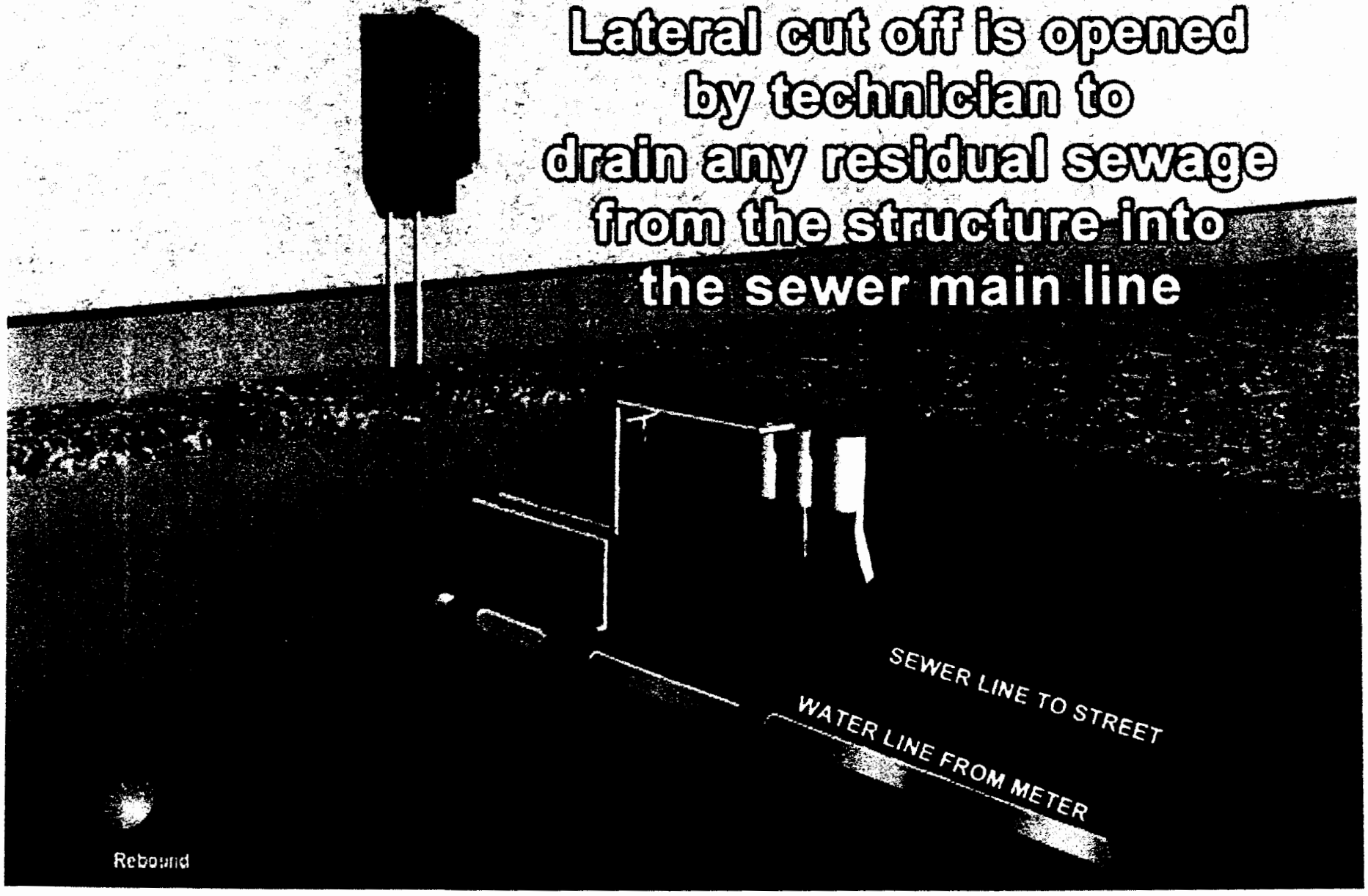
Persuasive Environmental Recovery System II



Persuasive Environmental Recovery System II



Persuasive Environmental Recovery System II



Patents

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Inventors	Exempt 6
Original Assignee	Exempt 6

Referenced by (1), Classifications (12)

External Links: USPTO, USPTO Assignment, Espacenet

Persuasive environmental recovery system
US 20090314351 A1

Abstract
A sewer backup alarm and overflow prevention device eliminates raw sewage spills by preventing pressure buildup in sewer drains. One or more sewage level sensors may be coupled to an alarm and/or to an automatic water main shut-off valve. The level sensor may detect excess fluid levels in a sewer lateral line. The sewer backup alarm and overflow prevention device may include a joggle which is a component of a non-mechanical backflow prevention device. The level sensor may detect fluid levels in the lower portion of the joggle and activate the automatic water main shut-off valve and/or the alarm. The sewer backup alarm and overflow prevention device may include at least one two-way, in-line cleanout tube which may extend vertically upwardly from the joggle. The level sensor may be mounted in the vertical cleanout tube. The components may be contained within a seamless polyethylene vault for ease of installation and protection against root intrusion.

Images(4)

Patent Drawing

Patent Drawing

Patent Drawing

Patent Drawing

Claims(20)

1. A system for preventing raw sewage spills comprising:
at least one sensor for detecting excess fluid levels in a sewer lateral line; and
a water main line shutoff valve fluidly coupled to a water main line, the water main line shutoff valve being communicatively coupled to the at least one sensor and being configured to prevent continued introduction of fluids into the sewer lateral line when the at least one sensor detects an excess fluid level.

2. The system of claim 1 further comprising:
an alarm communicatively coupled to the at least one sensor, wherein the alarm is activated when the at least one sensor detects the excess fluid level.

3. The system of claim 1 further comprising:
a joggle formed in the sewer lateral line, the joggle defining upper and lower portions of the sewer lateral line.

4. The system of claim 3 further comprising:
at least one tube extending upwardly from the lower portion;
wherein:
the sensor is configured to be mounted in the tube.

5. The system of claim 1 further comprising:
a joggle formed in the sewer lateral line, the joggle defining upper and lower portions of the sewer lateral line; and
an alarm communicatively coupled to the at least one sensor;
wherein:
the alarm is activated when the sensor detects that the fluid level reaches a lower-most side of the upper portion.

6. The system of claim 3 wherein the joggle is configured to provide a vertical offset between the upper and lower portions in an amount that is approximately equivalent to a height of the sewer lateral line.

7. The system of claim 3 wherein the joggle is configured such that an upper-most side of an interior of the lower portion is no higher than a lower-most side of an interior of the upper portion.

8. The system of claim 1 wherein the at least one sensor is sonar-based.

9. The system of claim 8 wherein the sonar-based sensor is an Echopod sensor.

10. The system of claim 1 wherein the at least one sensor activates external communications when excess fluid levels are detected.

11. The system of claim 1 wherein the alarm comprises a controller, the controller being configured to perform at least one of the following functions: receive signals from the at least one sensor, operate the alarm, control external communications.

12. The system of claim 11 wherein the controller further comprises:
at least one of a processor and a memory having stored program instructions for performing at least one of the following:
receiving signals from the at least one sensor;
closing the water main shutoff valve;
generating external communications.

13. The system of claim 1 further comprising at least one substance detector for detecting at least one of vapors, chemicals, combustibles.

14. The system of claim 1 wherein the substance detector is mounted in a test port.

15. The system of claim 1 further comprising a vault enclosure for housing at least one of the sensor and at least a portion of the sewer lateral line.

16. The system of claim 1 further comprising a vault enclosure for housing at least a portion of the water main line.

17. A method for preventing raw sewage spills comprising the steps of:
detecting fluid levels in a sewer lateral line; and
closing a valve in a water main line when excess fluid levels are detected.

18. The method of claim 17 further comprising the step of:

activating external communications when excess fluid levels are detected.
19. The method of claim 17 further comprising the step of:
detecting substances in the fluid.
20. The method of claim 19 further comprising the step of:
closing the valve in the water main line when substances are detected.
Description
CROSS-REFERENCE TO RELATED APPLICATIONS

(Not Applicable)

STATEMENT RE: FEDERALLY SPONSORED RESEARCH/DEVELOPMENT

(Not Applicable)

BACKGROUND

1. Field

The presently disclosed embodiments relate generally to municipal sewer devices and, more specifically, to a lateral sewer line backup alarm and water main shutoff device.

2. Background

Throughout history, there has been a general awareness of the need to protect the natural environment. However, starting in the 1960's, environmental awareness increased and the general deterioration of the environment due to construction, pollution and pesticide use attracted greater public attention. Organizations emerged which were devoted solely to the restoration, preservation and conservation of the environment and management of natural resources.

Acts were passed such as the Clean Water Act of 1972 with the goal of eliminating water pollution and preserving surface waters for sport and recreation. Events in the 1980's such as the Exxon Valdez oil spill heightened public awareness of the fragility of the environment and the need for its protection. Amendments to the Clean Water Act were directed toward regulating the discharge of pollutants into surface waters.

Despite the increase in public awareness of the effects of pollution, the improper discharge of raw sewage into the environment continues. Such raw sewage may include wastewater from sinks, showers, bathtubs and washing machines as well as toilet wastewater carrying human waste. Modem sewer systems carry much of the raw sewage away through a system of pipes or conduits.

For residential dwellings, lateral sewer lines typically extend from each residential building to a larger conduit or sewer main that delivers the raw sewage to a sewage treatment plant. Lateral lines can become blocked due to improper disposal of non-soluble objects such as plastic items, baby wipes and feminine products. The buildup of grease and other items can also cause blockage of lateral lines. Roots growing into the lateral line can be another cause of clogging or blockage.

In conventional lateral line installations, a blockage or clog can prevent the outflow of wastewater to the sewer main. Unless removed, the blockage or clog will cause wastewater and sewage to back up into the residential building. Removal of the clog may be effectuated by inserting a flexible snake or cable into a vertically oriented cleanout riser or port that is typically located adjacent an exterior wall of the building. The cleanout port may be covered with a cap which is removed to allow insertion of the cable into the lateral line. The cable may include a cutting tool on the end to "rod out" the lateral line by cutting and removal of the object or material that is blocking the lateral line.

Unfortunately, if the clog is located downstream of the cleanout port, then wastewater and sewage may backup into the building interior prior to the owner becoming aware of the clog. During this time, the wastewater and sewage will also continue to buildup pressure inside the lateral line as sinks, showers and toilets inside the building are used. Upon removal of the cleanout cap to allow rodding of the lateral line, the raw sewage and wastewater may be discharged out of the cleanout port at a high rate where it then flows into the storm drain. As is well known, storm

drains are intended to drain rainwater runoff from streets, sidewalks and roofs and are therefore typically not connected to a sewage treatment system. As such, raw domestic sewage that overflows a cleanout port during a rodding operation may enter a storm drain and may thereafter be discharged directly into a river, lagoon, reservoir, lake or into the ocean or other waterway.

The discharge of domestic raw sewage into the environment is a chronic source of pollution and is typically illegal. It is estimated that the amount of raw sewage that is released annually into the environment during sewer cleanouts is in the billions of gallons. As is well known, raw sewage poses a serious health risk due to the buildup of dangerous levels of bacteria in waterways that may be used for domestic purposes such as a supply for drinking and wash water or for recreational purposes such as swimming and surfing. Damage to the environment as a result of the discharge of raw sewage into waterways include fish kills and harm to local micro-ecosystems such as micro-flora and fauna.

Attempts have been made to develop systems capable of detecting and removing blockages that may otherwise cause sewage backups inside buildings and prevent the discharge of raw sewage into the environment. For example, U.S. Patent Application No. 20070028831 to Aniban discloses a sewer cleanout cap having a sensor mounted on a cap housing. In one embodiment, the cleanout cap includes a popup mechanism to visually indicate a backup in a sewer system. The popup mechanism is activated by pressure buildup in the sewer line. The cleanout cap further includes a circumferential seal which, under pressure from rising sewer waters, prevents the escape of sewer waters from the sewer cleanout.

U.S. Patent Application No. 20070257218 to Bood et al. discloses a one-way backflow preventing device having a one-way seal with a membrane. The membrane is configured to deform slightly to allow flow in one direction after which the membrane returns to its original shape such that flow in the opposite direction is prevented. The device may be fluidly installed between a sewer main and various sanitary appliances such as sinks, toilets, bidets, urinals, baths pools and other appliances as a replacement for conventional water traps.

U.S. Pat. No. 4,150,683 to Simon discloses a system for controlling the flow of surface water from catch basins into a combined sewer as well as eliminating the overflow of combined sewers into streams and lakes and the backup of sewage into residential units. The system prevents overflow of combined sewers by adjusting the size of the pipe interconnecting the lateral lines to the catch basin.

U.S. Pat. No. 4,546,346 to Wave et al. discloses a sewer line backup detection device and alarm which is adapted to be installed in a cleanout port. The device includes a pneumatic switch that is activated by a flexible diaphragm on the lower end of the device housing. A blockage in the sewer line exerts pressure on the flexible diaphragm causing the pneumatic switch to close and setting off the alarm. The alarm can be either local or remote such as at a dwelling from which the sewer line exhausts. The device may be used in combination with a detention tank located in a basement of a high-rise building such that a blockage causes the alarm to be issued such that upper level users of the high-rise building may avoid using the sewer system to prevent overflow damage to lower levels.

U.S. Pat. No. 4,973,950 to Tourtillott discloses a sewer blockage alarm for a sewer line having a pressure sensor. The pressure sensor may be mounted on top of a clean out branch which extends upwardly from the sewer line. A pressure bell is mounted above an open upper side of the sewer line. The pressure bell is connected to the pressure sensor and multiplies the pressure changes in the sewer line for accurate detection of an incipient clog so that an alarm may be triggered prior to an overflow condition. The alarm may be visual and/or audible such as by using an alarm light and/or a buzzer.

U.S. Pat. No. 5,651,147 to Steele et al. discloses a three-way elbow for installation between a water trap and a wastewater line. The three-way elbow includes a valve having a hose extending upwardly therefrom with a removable plug inserted into an open end of the hose. Upon occurrence of a clog, the plug is removed, the valve is opened, and a snake is inserted into the hose. The arrangement of the three-way valve permits extension of the snake directly into the wastewater line to clear the clog after which the snake is withdrawn, the valve is closed and the plug is installed back onto the hose.

U.S. Pat. No. 5,687,761 to Langes discloses a sewer lateral line cleanout device adapted to be mounted on a cleanout riser of a sewer lateral. The cleanout device includes a vertically movable piston portion having a float

member that rises under pressure from a backup in the sewer. The rising float member exposes a brightly colored wall that provides a visual indication of an impending sewer backup.

U.S. Pat. No. 6,311,721 to Aaron discloses a backflow stop plug adapted to be removably inserted between a junction of a residential sewer line and a sewer main. The backflow stop plug is adapted to prevent the backflow of sewage into the residence. The stop plug may be mounted on a rod having a turn handle for manually moving the stop plug into position. The plug is sized such that when compressed, the plug deforms to allow sealing around any debris and or sewage deposits located within the junction.

U.S. Pat. No. 6,443,091 to Matte discloses a drain alert detection device for detecting an overflow condition of a wastewater drain system as may be mounted on a household appliance such as a washing machine. The device includes an overflow conduit that is connected to an overflow detection mechanism having a vessel with a buoyant member contained therewithin. The buoyant member includes an overflow indicator which provides a visual indication of the extent of the overflow condition in proportion to the wastewater level in the vessel.

U.S. Pat. No. 6,997,201 to Preul discloses a wastewater control system for installation between a building sewer line and a sewer main. The control system includes a flow control device mounted in the building sewer line and further includes a hydraulic sensor and an actuator. When triggered by the hydraulic sensor, the actuator causes the flow control device to block the flow of wastewater from the building to the sewer main.

However, none of the above-referenced systems are understood to provide the combined capabilities of detecting a clog or blockage in the lateral sewer line prior to backup into the residence and shutting off the main water supply to prevent buildup of pressure in the lateral line and accidental discharge of raw sewage/wastewater from the cleanout port into the environment.

BRIEF SUMMARY

Embodiments disclosed herein address the above-stated deficiencies of the prior art by providing a Persuasive Environmental Recovery System (PERS) having a sensing device to detect sewage level changes and which may be linked to an automatic water main shut-off valve and/or alarm. In one aspect, a system for preventing raw sewage spills comprises at least one sensor, a water main line shutoff valve and/or an alarm. The sensor is configured to detect excess fluid levels in a sewer lateral line.

The water main line shutoff valve is communicatively coupled to the sensor for preventing water flow to a residence or building when the sensor detects an excess fluid level. The alarm is communicatively coupled to the sensor and is activated when the sensor detects an excess fluid level.

In another aspect, a method for preventing raw sewage spills comprises detecting excess fluid levels in the sewer lateral line and closing the valve in the water main line.

BRIEF DESCRIPTION OF THE DRAWINGS

The features and nature of the present invention will become more apparent from the detailed description set forth below when taken in conjunction with the drawings in which like reference numerals identify like parts throughout and wherein:

FIG. 1 is a side elevational view of an exemplary Persuasive Environmental Recovery System sewer backup alarm and overflow prevention device;

FIG. 2 is a top sectional view of an exemplary Persuasive Environmental Recovery System sewer backup alarm and overflow prevention device; and

FIG. 3 illustrates an exemplary vault enclosure for the Persuasive Environmental Recovery System sewer backup alarm and overflow prevention device.

DETAILED DESCRIPTION

The word "exemplary" is used exclusively herein to mean "serving as an example, instance, or illustration." Any embodiment described herein as "exemplary" is not necessarily to be construed as preferred or advantageous over other embodiments.

The Persuasive Environmental Recovery System (PERS) sewer backup alarm and overflow prevention device eliminates domestic sewage overflows at homes, businesses or any other type of building utilizing sewer lines. Such sewage overflows may occur as a result of pressure buildup when a sewer lateral line becomes blocked.

Typically, when a sewer lateral line becomes blocked between a building and a sewer main connection at the street, unaware occupants may continue to use water until sewage backs up in a bath tub, sink, basement drain, or other plumbing apparatus. This backup creates pressure in the sewer lateral line system wherein the lateral line must be cleared with blockages or clogs removed. Unfortunately, opening of the cleanout port during cleaning and blockage removal causes the release of built up pressure resulting in raw sewage spills into the environment.

The sewer backup alarm and overflow prevention device disclosed herein eliminates these sewage spills by preventing pressure buildup in the lateral sewer line and overflow of raw sewage and wastewater through a cleanout port. A sewage level sensing device (i.e., sensor) may be coupled to an alarm and/or to an automatic water main shut-off valve to prevent overflow and backup. The sewer backup alarm and overflow prevention device may optionally include a pair of the cleanout ports, a strategically placed substance detector and a sewer test valve that may be insertable in the sewer lateral line. In one embodiment, any or all of these components may be fully encased in a seamless vault for ease of installation and protection against root intrusion.

FIG. 1 is a side elevational view of an exemplary residential sewer system **100** into which may be installed a sewer backup alarm and overflow prevention device **108**. In the residential sewer system **100**, treated water may be provided from a municipal water source to a home (i.e., residence) or business through a water main line **102** when water main valve **104** is open. Wastewater and/or sewage may be returned to a sewage treatment center through a sewer main line (not shown) typically located under a street adjacent the building.

The sewer backup alarm and overflow prevention device **108** may comprise at least one vertical cleanout port or tube **110** or a set of two or more of the vertical tubes **110** mounted adjacent a joggle **120** formed in the sewer lateral line **106**. The joggle **120** and sewer lateral line **106** collectively form a non-mechanical backflow prevention device. The joggle **106** may separate upper and lower portions **122**, **124** of the sewer lateral line **106**. Preferably, the joggle **120** is configured such that the offset between the lower portion **124** and the upper portion **122** of the sewer lateral line **106** is approximately equivalent to a height (e.g., a diameter) of the sewer lateral line **106**. In another embodiment, the joggle **120** is such that an upper side of the interior of the lower portion **124** of the sewer lateral line **106** is no higher than a lower side of the interior of the upper portion **122** of the sewer lateral line **106**.

As shown in FIG. 1, the vertical tubes **110** may preferably be mounted on a lower portion **124** of the sewer lateral line **106**. At least one of the vertical tubes **110** of each set may comprise a level sensor **112** for detecting fluid or water levels such as wastewater or raw sewage levels in the sewer lateral line **106**. In one embodiment, the level sensor **112** may be configured as a sonar-based fluid level sensor and may be mounted on an upper end of the tube **110** as shown in FIG. 1 although the level sensor **112** may be mounted at any location along the vertical tube **110**.

As shown in FIGS. 1 and 2, the sonar-based level sensor **112** may be similar to that which is commercially known as an Echopod Level Sensor and which is available from Flowline Liquid Intelligence of Los Alamitos, Calif. The Echopod may be used to detect fluid levels and may be of the type that is used in refineries to determine if fluid levels are at point where an explosion could occur due to a buildup of gasses. The sonar-based level sensor **112** may be configured to convert a sonar signal to an electrical signal (e.g., milli-Volt signal) which may be communicatively transmitted to an alarm **114** and water main valve **104**. The level sensor **112** may be coupled to the alarm **114** and water main valve **104** by hard wiring, phone line, wireless signal, satellite, infrared, ultra sound or any other appropriate method.

Other configurations of the level sensor **112** are contemplated. For example, the level sensor **112** may be configured as a series of vertically-spaced submersible pressure transducers for detecting pressure and, hence, fluid level **116** along a variety of different depth ranges in the sewer lateral line **106**. The level sensor **112** may further be configured in any one of a variety of different sensing mechanisms adapted to sense the level of fluid **116** within the sewer lateral line **106**. In this regard, the level sensor **112** may include a mechanically-actuated switch that is

operated by magnetic, mechanical, cable, and other float level sensors means which are configured to open or close the mechanical switch. The mechanical switch may be actuated by direct contact with the switch or via magnetic operation.

The alarm **114** may be configured as any visible, audible, silently-reporting, bell, whistle, siren or flashing alert, or any combination thereof. The alarm **114** may comprise a controller **134** for receiving signals from the level sensor **112**, operating the alarm **114** alerts and controlling external communications with appropriate government or private agencies during the event of a blockage. The controller **134** may be processor-based and/or comprise a modem, wireless modem, radio or any other means for external communication. The controller **134** may comprise, or be coupled to, memory having stored program instructions for receiving signals from the level sensor **112**, closing the water main shutoff valve **104**, generating external communications and/or executing other user applications executable by the processor.

In one embodiment, the level sensor **112** may be mounted in sensor port tube **110** *a* such as on an upper end thereof although the level sensor **112** may be mounted at any location along the tube **110** *a*. The level sensor **112** activates the alarm **114** and initiates the closing of the water main valve **104** when the fluid level **116** in the sewer lateral line **106** reaches the lower-most side of the interior of the upper portion **122** of sewer lateral line **106**. However, the level sensor **112** can be programmed to activate the alarm **114** or to shutoff the water main shutoff valve **104** for any fluid level **116** location.

The cleanout port tube **110** *b* is preferably configured to provide access for locating and removing blockages in the sewer lateral line **106**. In this regard, following notification of a blockage by the alarm **114**, a cap covering the cleanout port tube may be removed and a flexible snake or cable (not shown) may be inserted into the cleanout port tube **110** *b*. The cable may include a cutting tool on the end to "rod out" the sewer lateral line **106** by cutting and removal of the object or material that is blocking the sewer lateral line **106**.

The water main shutoff valve **104**, when closed, prevents water from reaching faucets, washing machines, toilets and other plumbing in the building. Because water cannot enter the building through the water main line **102**, it cannot be returned through the sewer lateral line **106**, thus preventing pressure buildup in the sewer lateral line **106**. The level sensor **112** may also activate external communications to technicians or service personnel and may alert appropriate government or private agencies of a blockage and the need for service.

The sewer backup alarm and overflow prevention device **108** may optionally comprise a sewer test valve (not shown) for blocking the flow of water from the building to the main sewer line **106**. The sewer test valve may be inserted into the cleanout port tube **110** *b* to allow for temporary shut off of the flow of water through the sewer lateral line **106** while the system is tested or inspected to determine the location of the blockage. In one embodiment, the sewer test valve may be similar to that which is commercially known as a Test-Eze Test Gate and which is available from Mainline Backflow Products of Edmonton, Alberta, Canada.

In another embodiment of the sewer backup alarm and overflow prevention device **108**, two sets of tubes **110**, each set having a level sensor **112**, are located in different portions of the lateral sewer lateral line **106**. Preferably, the tubes **110** are located on the lower portion **124** and enable removal of a clog on an upstream or downstream side of the tubes **110**. In other embodiments, any configuration, or number, of tubes **110** and tube locations may be implemented without departing from the scope of the invention.

Referring to FIGS. 1 and 2, in a further embodiment, it is contemplated that an additional sensor configured as a substance detector **126** may be implemented in the sewer backup alarm and overflow prevention device **108**. For example, the substance detector **126** may be inserted into test port **136** which may optionally be formed with the tube **110** *a*. The substance detector **126** may be configured to detect the presence of predetermined substances such as chemicals or other foreign or illegal substances contained within the wastewater flowing in the sewer lateral line **106**. In addition, the substance detector may be configured to detect vapors and combustibles. Upon detection of certain predetermined substances, the substance detector **126** may be configured to cause an alarm to be sent to appropriate personnel and/or to cause the water main shutoff valve **104** to be activated into the closed position. In this regard, the substance detector **126** may be configured to detect methamphetamine labs by identifying target chemicals that are being outgassed during the cooking process. Fire departments, emergency services, law enforcement and the EPA may have an interest in detecting such chemicals.

The substance detector **126** may be mounted in an optional test port **136** extending from the sensor port tube **110** *a* at an angle and being adapted for detecting substances in wastewater flowing from the home or business. The substance detector **126** mounted in the angled test port **136** may detect vapors, chemicals, combustibles, or other substances. If so detected, the system **108** can be configured to automatically report the detected substances to appropriate personnel through the alarm panel **128**.

The sewer backup alarm and overflow prevention device **108** may be housed in a casing or vault enclosure **118** for ease of installation and protection against root intrusion. In one embodiment, the vault enclosure **118** comprises a seamless polyethylene vault although any material may be used to construct the vault. The vault enclosure **118** is easily retro-fittable to existing homes or installed in new homes or commercial buildings. Furthermore, the vault enclosure **118** may be configured in a variety of shapes, sizes and configurations and is not limited to the configuration shown in the figures. For example, as shown in FIG. 3, the vault enclosure **118** may include at least one and, more preferably, a pair of fins **138** which may be mounted on exterior sides of the vault enclosure **118** to prevent floating (i.e., vertical and/or horizontal movement) of the vault enclosure **118** as may occur if groundwater or other water generates pressure underneath the vault enclosure **118**. The fins **138** may be generally horizontally oriented as shown in FIG. 3 but may be formed in any suitable orientation (e.g. vertical or angles), shape, size or configuration.

Another embodiment of the sewer backup alarm and overflow prevention device **108** for high rise or multi-level buildings comprises the level sensor **112** installed on each floor for detecting an overflow condition on that floor. All level sensors **112** for the multi-level building may be communicatively coupled to one or more alarm panel **128** and one vault containing the tubes **110** for each sewer outlet from that building.

FIG. 2 is a top sectional view of the exemplary sewer backup alarm and overflow prevention device **108**. Sensor port tube **110** *a*, having level sensor **112** mounted therein, and cleanout port tube **110** *b*, extend vertically from sewer lateral line **106**. Level sensor **112** is communicatively coupled to water main shutoff valve **104** installed in the water main line **102** and the alarm **114** as detailed in FIG. 1. The tubes **110** and water main shutoff valve **104** may be encased in vault enclosure **118**. In another embodiment, the water main shutoff valve **104** and water main line **102** may be located outside of the vault enclosure **118**.

FIG. 3 illustrates an exemplary embodiment of a detailed view of a vault enclosure **118** for the sewer backup alarm and overflow prevention device **108**. Vault enclosure **118** may optionally comprises fittings **130** or openings for connection to water main line **102** and fittings **132** or openings for connection to the sewer lateral line **106**. Vault enclosure **118** may be a seamless or hermetically sealed unit. In another embodiment, vault enclosure **118** comprises two chambers separated be a vertical middle divider (not shown) wherein a pneumatic, electric or other type of valve and/or pump combination may drain the vault enclosure **118** in the event one chamber fills with water or fluid.

Thus, a novel and improved method and apparatus for a sewer backup alarm and overflow prevention device **100** has been described. Those of skill in the art would understand that information and signals may be represented using any of a variety of different technologies and techniques. For example, data, instructions, commands, information, signals, bits, symbols, and chips that may be referenced throughout the above description may be represented by voltages, currents, electromagnetic waves, magnetic fields or particles, optical fields or particles, or any combination thereof.

The various embodiments disclosed herein may be implemented or performed with a general purpose processor, a digital signal processor (DSP), an application specific integrated circuit (ASIC), a field programmable gate array (FPGA) or other programmable logic device, discrete gate or transistor logic, discrete hardware components, or any combination thereof designed to perform the functions described herein. A general purpose processor may be a microprocessor, but in the alternative, the processor may be any conventional processor, controller, microcontroller, or state machine. A processor may also be implemented as a combination of computing devices, e.g., a combination of a DSP and a microprocessor, a plurality of microprocessors, one or more microprocessors in conjunction with a DSP core, or any other such configuration.

The steps of a method or algorithm described in connection with the embodiments disclosed herein may be embodied directly in hardware, in a software module executed by a processor, or in a combination of the two. A software module may reside in RAM memory, flash memory, ROM memory, EPROM memory, EEPROM memory, registers, hard disk, a removable disk, a CD-ROM, or any other form of storage medium known in the art.

An exemplary storage medium is coupled to the processor such the processor can read information from, and write information to, the storage medium. In the alternative, the storage medium may be integral to the processor. The processor and the storage medium may reside in an ASIC. The ASIC may reside in the controller **134**, alarm panel **128**, or vault enclosure **118**. In the alternative, the processor and the storage medium may reside as discrete components in the controller **134**, alarm panel **128**, or vault enclosure **118**.

The previous description of the disclosed embodiments is provided to enable any person skilled in the art to make or use the present invention. Various modifications to these embodiments will be readily apparent to those skilled in the art, and the generic principles defined herein may be applied to other embodiments without departing from the spirit or scope of the invention. Thus, the present invention is not intended to be limited to the embodiments shown herein but is to be accorded the widest scope consistent with the principles and novel features disclosed herein.

Referenced by

Citing Patent	Filing date	Publication date	Applicant	Title
US20110132474 *	Dec 8, 2010	Jun 9, 2011	Utah State University	Back Flow Prevention System

* Cited by examiner

Classifications

U.S. Classification	137/2, 200/84.00R, 340/616, 137/428, 340/632
International Classification	G08B23/00, F17D3/00, E03F7/00
Cooperative Classification	E03F7/00, E03B7/071
European Classification	E03B7/07B, E03F7/00

Original text

Contribute a better translation

AL-14-000-5346

United States Senate

WASHINGTON, DC 20510

February 7, 2014

Ms. Jeanette Mendes
U.S. Environmental Protection Agency
Office of Brownfields and Land Revitalization
Mail Code 5105 T
1200 Pennsylvania Ave. NW
Washington, DC 20460

Dear Ms. Mendes:

We are pleased to write in support of the City of Belfast's (Belfast) application for an EPA Brownfields Cleanup Grant for the remediation costs at the Maskers' Theater and Thompson's Wharf located at 45 Front Street in Belfast, Maine.

The Maskers' Theater building was constructed in approximately 1870 and first operated as the freight house for the Belfast & Moosehead Lake Railroad, then later used as a playhouse for the Belfast Maskers theater troupe. The property was assessed under the EPA-funded, City of Belfast's Brownfields Assessment Program. Based on these assessments, it was discovered that the 45 Front Street property was historically utilized as a solid waste dump, and rail yard. These past uses contaminated soils at the property. Additionally, asbestos and flaking lead-based paint, were also identified in the Maskers' Theater.

Without funding, the City fears that the property will further deteriorate, be subject to vandalism, and cause harmful contamination to the surrounding area. Belfast has worked very hard to revitalize its community and encourage growth. The City believes that the Maskers' Theater and Thompson's Wharf are areas that have great potential.

We support EPA's efforts to assist states and communities in cleaning up and redeveloping Brownfield properties and we thank you for your time and effort on behalf of the City of Belfast. We urge your most careful consideration of this application, subject to all applicable laws and regulations, and ask that you please notify Meredith Cherry at (202) 224-2523 and Adam Lachman at (202) 224-5344 when a final decision has been made.

Sincerely,

Susan M. Collins
United States Senator

Angus S. King, Jr.
United States Senator

AL-14-000-4909

SUSAN M. COLLINS
MAINE

413 DIRKSEN SENATE OFFICE BUILDING
WASHINGTON, DC 20510-1904
(202) 224-2523
(202) 224-2693 (FAX)

COMMITTEES:
SPECIAL COMMITTEE ON AGING, RANKING MEMBER
APPROPRIATIONS
SELECT COMMITTEE ON INTELLIGENCE

United States Senate

WASHINGTON, DC 20510-1904

January 22, 2014

Administer Gina McCarthy
Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dear Administer McCarthy:

I am writing to express my support for the proposal submitted by the Town of Kittery, Maine for an EPA Brownfields Grant to clean and repair the Former Wood Island Saving Station.

Built in 1908, the Wood Island Saving Station was used by the United States Life Saving Service to protect and rescue mariners in distress. During WWII the United States Navy took over the facility and used it as an observation tower. The Saving Station's use was discontinued in 1955 and since that time it has been abandoned. The Wood Island Saving Station is one of the five remaining Saving Stations in Maine. Obtained by the Town of Kittery in 1973, the Town intended to demolish the Saving Station. However, after more than 850 residents signed two petitions to save the property, the Town decided to raise funds to repair it.

In 2012, the statewide historic preservation group, Maine Preservation included the Wood Island Saving Station on its list of the "Most Endangered Historic Properties in the State of Maine." The Town of Kittery hopes to clean the hazardous materials throughout the structure and make the necessary repairs to return the Saving Station to its former glory.

Thank you for your time and effort on behalf of the Town of Kittery. I urge your most careful consideration of this application, subject to all applicable laws and regulations, and ask that you notify Meredith Cherry (202) 224-2523 in my Washington, D.C. office when a final decision has been made.

Thank you for your attention to this matter.

Sincerely,

Susan M Collins

Susan M. Collins
United States Senator

AL-14-000-5042

United States Senate

WASHINGTON, DC 20510

February 4, 2014

The Honorable Tom Vilsack
Secretary of Agriculture
U.S. Department of Agriculture
1400 Independence Ave., S.W.
Washington, DC 20250

The Honorable Ernest Moniz
Secretary of Energy
U.S. Department of Energy
1000 Independence Ave., S.W.
Washington, DC 20585

The Honorable Gina McCarthy
Administrator
U.S. Environmental Protection Agency
William Jefferson Clinton Federal Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dear Secretary Vilsack, Secretary Moniz, and Administrator McCarthy:

We are writing to call your attention to the accomplishments of the cities of Lewiston and Auburn, Maine, which have installed a number of waste water treatment technologies at the Lewiston-Auburn Waste Water Treatment Facility. We also write to highlight the difficulties that small cities such as Lewiston face in finding federal assistance for waste water infrastructure improvement projects that provide return to ratepayers and energy generation.

In November 2011, the cities of Lewiston and Auburn jointly installed Maine's first publicly-owned anaerobic digester at the Lewiston-Auburn Waste Water Treatment Facility. The cities also were the first in Maine to install combined heat and power (CHP) capabilities at their publicly-owned sewage treatment plant. These capabilities allowed the cities to simultaneously modernize their facilities and collect methane byproduct in a manner that allows for its control and use as a source of renewable energy. According to the plant superintendent, the plant was built with no increase in cost to ratepayers, and is expected to save ratepayers $600,000 per year.

Given the significant public benefits of this project for waste water treatment and energy generation, Lewiston and Auburn have expressed concern with the dearth of federal programs available to help small cities of this size in bringing such technologies online. In the future, we ask that you consider, subject to all applicable laws and regulations, how your agencies may be better able to assist with similar projects in cities of this size.

Thank you for your consideration of this request. We look forward to your response.

Sincerely,

Susan M. Collins
United States Senator

Angus S. King
United States Senator

AL-14-000-5479

United States Senate

WASHINGTON, DC 20510

February 7, 2014

Ms. Jeanette Mendes
U.S. Environmental Protection Agency
Office of Brownfields and Land Revitalization
Mail Code 5105 T
1200 Pennsylvania Ave. NW
Washington, DC 20460

Dear Ms. Mendes:

We are pleased to write in support of Congress Street Hill Property, LLC (an affiliate of the County of Waldo) for a Brownfields EPA Cleanup Grant for the rehabilitation and remediation of the Jailer's House and Old County Jail in Belfast, Maine.

The Old Jail was built in 1851, and the Jailer's house in 1887. Together they are nestled in a residential neighborhood among Greek revival antebellum-era homes. This downtown and neighborhood historic district is listed in the National Register of Historic Places.

Over time, the use of these buildings evolved, but both are now vacant. Use of the Old Jail has changed from a jail to an evidence storage facility. Use of the Jailer's House has changed from the place of residence for jailers to the sheriff's office, as well as an overnight police dispatch center since the 1970s. Although the buildings have been modernized as the uses have necessitated, unique architectural features have been preserved, including original wooden doors and hardware, trim and moldings and window sashes. Original floors are also beneath carpets, and tin ceilings are simply hidden and both remain to be uncovered and restored.

These vacant buildings are in need of remediation to remove asbestos and lead paint so that they be restored and re-tasked. We understand that Brownfields Grant funding would assist in the plans of Congress Street Hill Property, LLC to rehabilitate this site, and in turn to revitalize the Congress Street area of Belfast, Maine. The Congress Street Hill project in Belfast, Maine is an excellent example of Maine Preservation's mission to preserve historic properties and enhance Maine's communities.

We support EPA's efforts to assist states and communities in cleaning up and redeveloping Brownfield properties and we thank you for your time and effort on behalf of the City of Belfast. We urge your most careful consideration of this application, subject to all applicable laws and regulations, and ask that you please notify Meredith Cherry at (202) 224-2523 and Adam Lachman at (202) 224-5344 when a final decision has been made.

Sincerely,

Susan M. Collins
United States Senator

Angus S. King, Jr.
United States Senator

R5-14-000-7849-C

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Congress of the United States
House of Representatives
Washington, DC 20515–2208

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ENERGY AND COMMERCE COMMITTEE
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COMMUNICATIONS, TECHNOLOGY, AND THE INTERNET

April 1, 2014

Susan Hedman
Administrator
U.S. EPA Region 5
Ralph Metcalfe Federal Building
77 West Jackson Boulevard
Chicago, IL 60604-3590

Dear Administrator Hedman:

I am writing in support of the application by the City of Fenton, Michigan, for a $200,000 Hazardous Substances Assessment Grant and a $200,000 Petroleum Assessment Grant from the U.S. EPA to fund community outreach, inventory of brownfield sites, site investigation, and reuse and remediation planning for brownfield sites in the downtown areas and throughout the city. The grant will also enable the integration of brownfield concerns into ongoing downtown and city wide planning and development efforts. Most importantly, the grants will provide a key piece of the funding portfolio necessary to redevelop former industrial sites into valuable real estate that will benefit the city, local businesses, the local economy, and the community as a whole.

As you may know, Michigan has been directly impacted by the dramatic restructuring of the domestic automotive industry and manufacturing in general. Fenton has experienced a 13% loss in manufacturing between 2008 and 2011, which has led to a significant decrease in property tax values—by nearly 24%. The loss of about a quarter of property tax revenue in the last 7 years has made it impossible for Fenton to fund the assessment and cleanup of brownfield sites, which would make the receipt of this award of tremendous value to the City's redevelopment plan.

I support Fenton's ongoing efforts to redevelop its economy and ask that you strongly consider the city for the brownfield grant. This important funding opportunity would allow Fenton to remediate contaminated properties, enabling the city to make important strides to redevelop these properties.

Again, thank you for your consideration. Should you have additional questions or concerns, please do not hesitate to contact me.

Sincerely,

Mike Rogers

Mike J. Rogers
Member of Congress

AL-14-000-4297

ROGER F. WICKER
MISSISSIPPI
ARMED SERVICES
BUDGET
COMMERCE, SCIENCE AND TRANSPORTATION
ENVIRONMENT AND PUBLIC WORKS

United States Senate

WASHINGTON, DC 20510

SUITE 555
DIRKSEN SENATE OFFICE BUILDING
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(202) 224-6253

www.wicker.senate.gov

January 17, 2014

The Honorable Gina McCarthy
Administrator
Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460-0003

Dear Gina,

I would like to express my support for the city of Gautier's application for a Brownfields Assessment Grant.

Funding from the Environmental Protection Agency in the amount of $400,000 will allow the city of Gautier to identify and assess potentially contaminated sites for hazardous substances and petroleum contamination. These necessary steps in the process of redevelopment will further the efforts of the city to reduce blight and ensure the health and welfare of the residents and visitors of Mississippi.

I hope that you will give the city of Gautier's application every consideration. Should additional information be required from my office, please contact Jennifer Schmidt of my staff at (228) 604-2383.

With best wishes, I am

Sincerely yours,

Roger Wicker

Roger F. Wicker

RFW/BW

AL-14-000-5175

LINDSEY O. GRAHAM
SOUTH CAROLINA

290 RUSSELL SENATE OFFICE BUILDING
WASHINGTON, DC 20510
(202) 224-5972

UNITED STATES SENATE

February 3, 2014

Ms. Laura Vaught
Associate Administrator for Congressional and Intergovernmental Relations
Environmental Protection Agency
1200 Pennsylvania Avenue NW
Room 3426 ARN
Washington, DC 20460-0003

RE: exempt 6 Tega Cay Water Citizen Advisory Council
Hon. George Sheppard, Mayor of Tega Cay, SC

Dear Ms. Vaught:

Enclosed, please find copies of correspondence I have received from the above named constituents filed on behalf of the residents of Tega Cay, SC.

The citizens of Tega Cay, SC and their elected officials have serious concerns about what they view as an inadequate and outdated sewer system servicing their community. These residents have come to experience routine overflows of raw sewage in their streets, yards, and homes. Ultimately, the sewage runs into Lake Wylie, the source of drinking water for many in this region.

The sewer and water treatment services are managed and maintained by a private utility company, Utilities Inc. Residents of Tega Cay have concerns that this provider may be in violation of federal statute.

Your reviewing this material and providing any assistance or information possible under the governing statutes and regulations will be greatly appreciated. It is my understanding that Congressman Mulvaney has also inquired about this issue.

Thank you for your attention in this matter. I look forward to hearing from you soon.

Sincerely,

Lindsey O. Graham
United States Senator

508 HAMPTON STREET
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(803) 933-0112

401 WEST EVANS STREET
SUITE 111
FLORENCE, SC 29501
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130 SOUTH MAIN STREET
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630 JOHNNIE DODDS BOULEVARD
SUITE 202
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235 EAST MAIN STREET
SUITE 100
ROCK HILL, SC 29730
(803) 366-2828

124 EXCHANGE STREET
SUITE A
PENDLETON, SC 29670
(864) 646-4090

LOG/rt

Please refer to case (578669) when you respond.
Please reply to: Senator Lindsey Graham
235 East Main Street, Suite 100
Rock Hill, SC 29730
(803)366-2828ph. (803)366-5353fax

AUTHORIZATION FORM

By providing the information below and signing this form, I hereby authorize EPA (agency name) to furnish the office of U.S. Senator Lindsey Graham information pertaining to my claim or request. This authorization is in accordance with the Privacy Act of 1974.

Name: exempt6 Phone: exempt6

Address: exempt6 exempt6

City: exempt6 State: exempt6 Zip exempt6

Social Security Numb exempt6 VA Number (if applicable):

In the space below, briefly describe the problems that you are experiencing and explain exactly what you would like Senator Graham to do on your behalf. Without this information, it will be impossible for Senator Graham to adequately assist you. (If you need more space, please use the back of the form).

Utilities Inc of Tega Cay Water Service continues Entering Sewer Backflows into Tega Creek

George Sheppard
Mayor - City of Tega Cay, SC

Signed: George Sheppard - Mayor Date: 1/15/2014

NOTE: Those requesting assistance from Senator Graham should note that if they are represented by an attorney, that attorney should be advised that you have contacted the Senator's office. This is to reduce any confusion associated with your case.

If represented by an attorney, please give attorney's name _____

Please return form to:

U.S. Senator Lindsey O. Graham
235 East Main Street, Suite 100
Rock Hill, South Carolina 29730
Phone: (803) 366-2828
Fax: (803) 366-5353

AUTHORIZATION FORM

By providing the information below and signing this form, I hereby authorize _____ (agency name) to furnish the office of U.S. Senator Lindsey Graham information pertaining to my claim or request. This authorization is in accordance with the Privacy Act of 1974.

Name: exempt6 Phone: exempt6

Address: exempt6

City exempt6 State: exempt6 Zip: exempt6

Social Security Number: exempt6 VA Number (if applicable): N/A

In the space below, briefly describe the problems that you are experiencing and explain exactly what you would like Senator Graham to do on your behalf. Without this information, it will be impossible for Senator Graham to adequately assist you. (If you need more space, please use the back of the form).

Sewage is going into Lake Wylie in York County yearly since I moved to Tega Cay in 1995. This is a violation of the federal Clean Water Act. I have provided documentation of the amounts spilled + pictures in an email to Philip Land. Please view our web page FlushUT.com & Facebook for more documentation. It is evident Utilities Inc/Tega Cay Water Service needs to be shut down for not providing proper service.

Signed: exempt6 Date: January 13, 2014

NOTE: Those requesting assistance from Senator Graham should note that if they are represented by an attorney, that attorney should be advised that you have contacted the Senator's office. This is to reduce any confusion associated with your case.

If represented by an attorney, please give attorney's name _____

Please return form to:

U.S. Senator Lindsey O. Graham
235 East Main Street, Suite 100
Rock Hill, South Carolina 29730
Phone: (803) 366-2828
Fax: (803) 366-5353

Utilities, Inc.

January 17, 2014

Paul F. Wise
DHEC - Bureau of Water
Water Pollution Enforcement Section
2600 Bull Street
Columbia, South Carolina 29201

Re: **NOTICE OF VIOLATION**
Tega Cay Water Services Inc.
Tega Cay #2- NPDES Permit SC0026743
Tega Cay #3 & #4- NPDES Permit SC0026751
York County

Dear Mr. Wise,

This is in response to your letter dated January 7, 2014 in the above referenced matter.

Tega Cay Water Service, Inc. (TCWS) is currently operating in compliance with Consent Order 11-004-W and continues to make improvements to the wastewater system serving the Tega Cay community. During periodic update meetings with DHEC, TCWS has kept your agency informed of the responsive activities it has performed to date to correct the excessive inflow and infiltration plaguing this system. Prior to the recent rain events on December 23rd (a 10-year storm event at 5.5 inches) and December 29th, TCWS was inspecting, replacing, relining its collection system and refining a strategically focused maintenance program utilizing the massive amount of data it has collected over the past several years. This work addressed the different types of overflows with the collection system. For example, improvements have been made to reduce the occurrence of sanitary sewer overflows (SSOs) caused by blockages (e.g. root intrusion, grease, etc.) as well as a reduction in the potential for overflows caused by inflow and infiltration (I&I).

In summary, the work completed to date under the existing CO consists of:

- The successful installation of Phosphorus treatment removal equipment at WWTP #2 and #3;
- Inspecting/cleaning for root intrusion and grease accumulation using smoke testing and CCTV technology to significantly reduce system overflows relating to collection system blockages;
- Upgrade of several critical lift stations to improve operational efficiency and effectiveness;
- Thorough system smoke testing, dye testing and the inspection manholes to locate points of rainwater inflow. The inspection identified a number of open or altered manhole lids which were replaced by correct lids and installation of lid inserts. All manholes accessing clay pipe collector mains were inspected in May 2013;

- Installation of flow metering (movable) devices at various locations to supplement the data obtained from the lift stations to aid in the identification of the most severe locations of I&I;
- The installation of over 7,000 feet of CIPP (cured in place pipe), in addition to pipe replacement and pipe spot repairs in locations where infiltration and root intrusion identified;
- The complete inspection of the collection system utilizing state of the art sounding equipment (SL-RAT) to identify the degree of blockage in each section of pipe;

Since June of 2013, TCWS has monitored rain events to determine the effectiveness of the improvements that had been completed so far, and to identify additional improvements required by the system. The flow data collected during the rain events last summer and fall demonstrated that the collection system improvements TCWS had previously completed did in fact reduce I&I; however, the data also identified additional points of inflow in the system. Throughout that period, TCWS has worked to eliminate inflows identified in the data.

While the improvements have made a difference in the amount of inflow coming into the collection system, the age and location of the pipes continue to present a unique challenge that becomes painfully obvious during periods of intense and prolonged rainfall. The overflows relating to these most recent rain events confirmed our knowledge that we still have ongoing work to do. A preliminary review of the flow data from the plants and lift stations during these events indicate more widespread inflow & infiltration problems. The rainfall data is being analyzed in an effort to identify more direct correlation for what can be expected from a 2 inch vs. a 4 inch rain event.

Rainfall Measured in inches

	WWTP #2	WWTP #3	NOAA TEGS1
12/22-23/2013	5.5[1]	5.5	3.71
12/29/2013	2.0	2.0	1.76

Footnote [1]: To put these rain events into perspective, a 5.5 inch rain is equivalent to a 10 year event in the Tega Cay area. In comparison, a 2.8 inch rain has a frequency of once per year (a 1 year rain event)

The impact that rainfall has on I&I is very unpredictable. Many variables exist that affect the location and volume of overflows. These variables include rainfall duration, intensity, and soil saturation. Additionally, lake levels have an impact on soil saturation and hydraulic head resulting in varying volumes of I&I for a given rain event. Consequently, TCWS was not able to precisely determine collection system's capacity for handling a given rain event expressed in inches.

Following the occurrence of the December SSOs, TCWS met with its engineering consultant and reviewed the recent flow data. The fact that the TCWS system has continued to experience SSOs during rain events indicates that, despite the progress TCWS has made through replacing or lining significant portions of the sewer mains in the collection system, additional steps are necessary to further reduce the occurrence of SSO's. W.K. Dickson Engineering firm has been tasked by TCWS to perform an alternatives analysis of the flow data, provide an assessment of the current situation, and present a plan that includes the evaluation of other options available. TCWS wants to ensure it is taking the right path, targeting the most effective and efficient resolution to the overflow problems of this system.

TCWS requested the following options be included in the engineer's analysis (but that the study is not to be limited to these options):

1. Install Equalization (EQ) Storage at both wastewater treatment plant sites with continued improvements being made to the collection system;
2. Convert existing treatment plants to EQ storage and pump wastewater to a nearby municipality for bulk treatment with continued improvements being made to the collection system;
3. Install CIPP (liner) in all clay pipe sections of the collection system;
4. Replace all the clay pipe sections of the collection system.

TCWS has specifically asked the engineer to develop detailed specifications for the engineering options it identifies (including but not limited to the four options stated above) and present these and an associated plan, including timelines and cost estimates. The engineer has indicated the alternatives analysis will be completed by January 28, 2014.

The progress reports provided to DHEC for the work performed under the current Consent Order (CO) have demonstrated the comprehensive nature of the effort required to resolve the SSO issues at Tega Cay. In 2011 the focus of the work was smoke testing, CCTV inspections and cleaning the blockages that were then thought to be the primary cause of the collection system SSOs. In early 2013 the overflows of record were determined to be largely the result of infiltration and inflow. Based on the duration and intensity of the rain events, TCWS determined there was a significant amount of inflow (in addition to infiltration) that needed to be addressed and TCWS was successful in identifying and correcting several point sources of inflow During the summer and fall months of 2013 there were no significant rain events. TCWS knew the the age and location of the pipes would continue to present challenges and be susceptible to excess I&I.

This response summarizes the corrective actions that have been implemented and the plan of action going forward to prevent future sewer system overflows. Due to the complexity of this issue there is much more detail that can be provided to demonstrate TCWS has taken, and continues to take, all reasonable steps to correct the system's deficiencies. TCWS respectfully requests a meeting with DHEC representatives to further explain the work performed under the current CO and

summarized above. Our engineer and appropriate staff will be available at your convenience for such a meeting.

Sincerely,

Richard J. Durham, P.E.

Cc: Glenn Trofatter, DHEC

John Hoy, Utilities, Inc./TCWS

AL-14000-9859

LINDSEY O. GRAHAM
SOUTH CAROLINA

290 RUSSELL SENATE OFFICE BUILDING
WASHINGTON, DC 20510
(202) 224-5972

UNITED STATES SENATE

May 13, 2014

Ms. Gina McCarthy
Administrator
Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460-0003

Dear Gina:

I understand that you will soon be making decisions on grant awards. The Town of Saluda, SC, submitted a proposal under the Brownfields Community-Wide Hazardous and Petroleum Assessment Grant Program, and I ask that you give it full consideration under all appropriate guidelines and regulations.

Thank you for your assistance with this matter. If I can provide additional information, please do not hesitate to contact me.

Sincerely,

Lindsey O. Graham
United States Senator

LOG/deb

508 HAMPTON STREET
SUITE 202
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(803) 933-0112

401 WEST EVANS STREET
SUITE 111
FLORENCE, SC 29501
(843) 669-1505

130 SOUTH MAIN STREET
SUITE 700
GREENVILLE, SC 29601
(864) 250-1417

530 JOHNNIE DODDS BOULEVARD
SUITE 202
MOUNT PLEASANT, SC 29464
(843) 849-3887

235 EAST MAIN STREET
SUITE 100
ROCK HILL, SC 29730
(803) 366-2828

124 EXCHANGE STREET
SUITE A
PENDLETON, SC 29670
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